



# JOHNS-MANVILLE Brad Bradley

**Asbestos Site Evaluation, Communication and Cleanup**

**Keystone, Colorado  
September 22—26, 2003**



# SITE BACKGROUND

## Overview

- Former asbestos manufacturing facility
- Operated 1928-1998
- Generated 3,000,000 cubic yards of asbestos waste
- Located in Waukegan, Illinois
- Remedial Action completed in 1991
- Additional ACM found starting in 1998





# SITE BACKGROUND

## Geography/Affected Area

- Located next to Lake Michigan







# SITE BACKGROUND

## Population Affected

- Nearest residence is one-half mile away
- Popular fishing pier is on property adjacent to site






# SITE BACKGROUND

## Mineral Forms of Asbestos

- Primarily Chrysotile, some Amphibole and Crocidolite





# SITE BACKGROUND

## Asbestos-Related Health Effects

### **Occupational Exposure**

- Not much data in EPA files but workers died from asbestos-related diseases

### **Environmental Exposure**

- Primary pathway via air emissions
- Ground water/surface water not significant pathway





# ACTIVITIES BY EXPOSURE PATHWAY – SOIL Sampling

## Methods Used

- Bulk Sampling Method-PCM

## Location of Samples

## Number of Samples




# ACTIVITIES BY EXPOSURE PATHWAY – SOIL Sampling (conclusion)

## Problems

- No soil standard
- Hard to pick action level
- Used 1% as cutoff, may not be protective







# ACTIVITIES BY EXPOSURE PATHWAY – SOIL Analysis

## Mineralogic Asbestos Evaluation

- Used standard methods-did not deviate

## Specific Counting Procedures or Rules

## Cleavage Fragments



# ACTIVITIES BY EXPOSURE PATHWAY – SOIL Analysis (cont)

Estimated Sensitivity to Methods

Deviations from Standard Protocols

- None



# ACTIVITIES BY EXPOSURE PATHWAY – SOIL

## Analysis (conclusion)

### Issues

- No soil cleanup level for asbestos was serious problem for fill material clearance and more recently-discovered areas



# ACTIVITIES BY EXPOSURE PATHWAY – SOIL Results

- Up to 70% in sludge
- Variable based on waste type





# ACTIVITIES BY EXPOSURE PATHWAY – SOIL Remediation Strategy

- Capping/paving/rip rap



# ACTIVITIES BY EXPOSURE PATHWAY – AIR Sampling

## Methods Used

- TEM, cassettes

## Location of Samples

## Number of Samples



# ACTIVITIES BY EXPOSURE PATHWAY – AIR

## Sampling (conclusion)

### Problems

- Standard sampling method very ineffective at detecting fibers in open air





# ACTIVITIES BY EXPOSURE PATHWAY – AIR

## Analysis (conclusion)

### Issues

- Need standard for air emissions
- Need more effective sampling method





# ACTIVITIES BY EXPOSURE PATHWAY – AIR Results

## Personal Monitors

- Elevated levels on workers, especially if material got on protective clothing

## Area Sampling

- Very few elevated levels
- Using visible emission observations much more effective





# ACTIVITIES BY EXPOSURE PATHWAY – Other Source Material Sampling

## Methods Used

- Same as for soil

## Location of Samples

## Number of Samples





# ACTIVITIES BY EXPOSURE PATHWAY – Other Source Material Sampling (conclusion)

## Problems

- Same as for soil



# ACTIVITIES BY EXPOSURE PATHWAY – Other Source Material Analysis (conclusion)

## Issues

- Same as for soil





# QUESTIONS???

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